What Is Claimed Is:

1. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein the mass target and the spring mechanism are in the form of a membrane; and

transducer means for measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure.

2. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is

presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein the mass target is in the form of a membrane and at least a portion of the spring mechanism is in the form of spring arms; and

transducer means for measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure.

3. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein at least one of the mass target and the spring mechanism comprises a first electrode, with a second electrode being spaced from and stationary relative to the first electrode;

first transducer means for applying a voltage across said first and second electrodes so as to induce oscillation of the mass target; and

second transducer means for measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure by converting the capacitance across the first and second electrodes into frequency by including it in a tank circuit of an electronic oscillator.

4. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, wherein at least one of the mass target and the spring mechanism comprises a first electrode, with a second electrode being spaced from and stationary relative to the first electrode, and further wherein at least one of the mass target and the spring

mechanism comprises a first mirror, with a second mirror being spaced from and stationary relative to the first mirror;

first transducer means for applying a voltage across said first and second electrodes so as to induce oscillation of the mass target; and

second transducer means for measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure by optically measuring the distance between the first and second mirrors.

5. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein at least one of the mass target and the spring mechanism

comprises a first electrode, with a second electrode being spaced from and stationary relative to the first electrode;

first transducer means for applying a voltage across said first and second electrodes so as to induce oscillation of the mass target;

second transducer means for tuning the frequency of the voltage applied across the first and second electrodes so as to be substantially twice the mechanical resonance frequency of the structure; and

third transducer means for measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure by converting the capacitance across the first and second electrodes into frequency by including it in a tank circuit of an electronic oscillator.

6. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is

presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, wherein at least one of the mass target and the spring mechanism comprises a first electrode, with a second electrode being spaced from and stationary relative to the first electrode, and further wherein at least one of the mass target and the spring mechanism comprises a first mirror, with a second mirror being spaced from and stationary relative to the first mirror;

first transducer means for applying a voltage across said first and second electrodes so as to induce oscillation of the mass target; and

second transducer means for measuring the fluid pressure by characterizing the additional motion that the fluid molecules induce in the structure by optically measuring the distance between the first and second mirrors.

7. A pressure sensor for measuring fluid pressure comprising:

a pressure sensing structure comprising a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical

resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein at least one of the mass target and the spring mechanism comprises a first mirror, with a second mirror being spaced from and stationary relative to the first mirror; and

transducer means for measuring the fluid pressure by characterizing the motion that the fluid molecules induce in the structure by optically measuring the distance between the first and second mirrors.

8. A method for measuring fluid pressure comprising:

positioning a pressure sensing structure in the fluid, wherein the pressure sensing structure comprises a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein the mass target and the spring mechanism are in the form of a membrane;

inducing oscillation in the structure; and

measuring the fluid pressure by characterizing the effects that the fluid molecules produce on the motion of the structure.

9. A method for measuring fluid pressure comprising:

positioning a pressure sensing structure in the fluid, wherein the pressure sensing structure comprises a mass target suspended on a spring mechanism, wherein the mass target and the spring mechanism together exhibit high Q mechanical resonance, wherein the mass target has an area which is presented in a plane perpendicular to the direction of the mechanical oscillation of the structure, and further wherein at least one of the mass target and the spring mechanism comprises a first mirror, with a second mirror being spaced from and stationary relative to the first mirror; and

measuring the fluid pressure by characterizing the motion that the fluid molecules induce in the structure by optically measuring the distance between the first and second mirrors.